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ABSTRACT

This study involves developing a motivational model of college achievement. The predictor variables, which were procrastination tendency, self-efficacy, self-regulation, intrinsic value, outcome value, cognitive strategy, test anxiety, students grade goals, parent grade goals, and grade point average, as well as the criterion variable exam achievement, were measured for 168 college students. Using structural equation modeling, a best-fit model of college student motivation to achieve was determined. The model suggests that college students' self-regulation behaviors, intrinsic value for learning, and lack of test anxiety yield a level of self-efficacy for course achievement that combines with grade point average and parents' grade goals to influence student grade goals. The combination of student grade goals, grade point average, and lack of test anxiety then demonstrate the strongest connection to achievement. (Contains one table, one figure, and 12 references.) (Author/MKA)

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DEVELOPING A MOTIVATIONAL MODEL OF COLLEGE ACHIEVEMENT

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Developing a Motivational Model of College Achievement

Abstract. The following predictor variables: procrastination tendency, self-efficacy, self-regulation, intrinsic value, outcome value, cognitive strategy, test anxiety, student grade goals, parent grade goals, and grade point average, and the criterion variable: exam achievement, were measured for 168 college students. Using structural equation modeling, a best-fit model of college student motivation to achieve was determined. The model suggested that college students' self-regulation behaviors, intrinsic value for learning, and lack of test anxiety yield a level of self-efficacy for course achievement that combines with grade point average and parents grade goals to influence student grade goals. The combination of student grade goals, grade point average, and lack of test anxiety then demonstrate the strongest connection to achievement.

Developing a Motivational Model of College Achievement

Motivational constructs focus on three aspects of individuals' behavior: the activities they choose to enage in, the level of their intensity, and their persistence (Pintrich & Schrauben, 1992). When the activities contribute to learning in an educational setting, they represent cognitive engagement. Ultimately, the purpose of such engagement is to enhance achievement.

Many different motivational constructs have been proposed as precursors and influencers of academic achievement, generally under the rubric of self-regulation. Prominent among these are expectations, values, goals, and learning strategies. Pintrich and DeGroot (1990) examined the relationship of academic performance among seventh-graders to their self-efficacy, intrinsic value, test anxiety, cognitive strategy use, and self-regulation tendency and found self-regulation tendency, self-efficacy, and test anxiety to be the best predictors. Tuckman (1993) obtained similar results for college students with the addition of grade importance as another strong predictor variable. Zimmerman, Bandura, and Martinez-Pons (1992) demonstrated support for a causal model that showed a combined influence of self-efficacy and grade goals on academic achievement among ninth and tenth graders.

A consistent finding across many studies is the key role that academic self-efficacy beliefs play as a mediator between students' self-regulatory activities and their success in school (Pajares, 1997; Zimmerman, 1995). Attitudes, particularly about one's own ability to succeed, combined with self-regulatory strategies and placing a value or importance on success seem to be the most important motivational prerequisites for academic success. Further evidence of the importance of these components is found in experimental studies that show that improving self-regulatory strategies such as goal setting and self-monitoring enhances students' self-efficacy beliefs as well as their task skills (Schunk, 1996; Tuckman, 1991a; Zimmerman &

Kitsantas, in press).

The purpose of the present study was to combine and expand on these past studies by combining their predictor variables with another variable closely related to self-regulation, namely procrastination tendency, to build a causal model to explain academic achievement among community college and four-year college students. The potential value of this effort to build a more complete causal model linking motivational variables to achievement would be to enhance the theory base in this area, and to ultimately improve motivation levels and increase achievement.

Method

Ss were 106 students enrolled in two sections of an undergraduate Educational Psychology course at a university, and 62 students enrolled in two sections of a Psychology of Adjustment course at a community college. Seventy percent of the total sample were women, 85% were white, and the median educational level of both parents was high school graduate. Ss ranged in age from 18 to 22.

The following predictor variables were measured: (1) procrastination tendency using Tuckman's (1991b) Procrastination Scale (16-items: alpha = .88; sample item: "I needlessly delay finishing jobs, even when they are important"); (2) self-efficacy for the course from Pintrich and DeGroot's Motivated Strategies for Learning Questionnaire (MSLQ; 9 items; alpha = .89; sample item: "Compared with other students in this class, I expect to do well"); (3) self-efficacy for the exam (Tuckman, 1993; 1 item: "What grade do you believe you will be able to get in the exam?"); (4) intrinsic value (MSLQ; 9 items; alpha = .87; sample item: "I prefer class work that is challenging so I can learn new things"); (5) outcome value (Tuckman, 1993: 1 item: "It is very important for me to get the grade I've set as my personal goal in this class"); (6) test anxiety (MSLQ; 4 items; alpha = .75; sample item: "I am so nervous during a test that I cannot remember facts I have learned"); (7) cognitive strategy use (MSLQ; 12 items; alpha = .83; sample

item: "When I study, I put important ideas into my own words"); (8) self-regulation (MSLQ; 9 items; alpha = .74; sample item: When work is hard, I either give up or study only the easy parts"); (9) student grade goals (Zimmerman et al., 1992; 2 items; "What grade have you set as your personal goal for this course? What grade would you regard as minimally satisfying for this course?"); (10) parent grade goals (Zimmerman et al., 1992; 1 item; "What grade would your parents regard as minimally satisfying for this course?"); (11) grade point average.

The criterion measure was achievement. For the community college course, achievement was measured by a 60-item multiple-choice test (alpha = .85), and for the university course, achievement was measured by a 75-item multiple-choice test (alpha = .86). Scores on both tests were converted to standard scores.

Results and Conclusions

A matrix of correlations was done between all variables (see Table 1), followed by the generation of a covariance matrix. The covariance matrix was then used as input for structural equation modeling using LISREL 8 (Joreskog and Sorbom, 1989). The initial model used was that confirmed by Zimmerman et al. (1992) using ninth- and tenth-graders. That model was then adjusted to best fit the data in this study, resulting in the model shown in Figure 1. This model yielded a good fit to the data as reflected by a chi-square of 16.59 (df=9), with a significance level greater than .05, indicating that the obtained covariance matrix was not significantly different from the matrix implied by the model. In addition, the obtained adjusted goodness of fit index (AGFI=.91) was greater than the value recommended for acceptance of a model (.90), as was the normed fit index (NFI=.95).

The model shows that achievement is directly influenced by three variables: (1) grade point average, (2) student goals, and (3) test anxiety. The fact that prior academic performance predicts subsequent performance is not surprising, and has

been well-documented (see, for example, Sexton and Tuckman, 1991). Zimmerman et al. (1992) found that past performance related indirectly to subsequent performance rather than directly as in this study. Because achievement is measured by a multiple-choice test, it is also not surprising to find that it is directly related to test anxiety. Zimmerman et al. did not measure this variable, but Pintrich and DeGroot (1990) found test anxiety to be related to test performance. Student goals represent the grade students aspire to and find acceptable, and directly predict subsequent performance here as they did in the Zimmerman et al. model. Student goals would appear to represent the value component of the motivational model.

In the model identified in this study, self-efficacy for course achievement did not directly relate to achievement as it did in the Zimmerman et al. model. Its impact was indirect, resulting from its relation to student goals, which was substantial. Grade point average, parent goals, and self-efficacy all related to student goals, with self-efficacy exerting the major impact. Self-efficacy, in turn, was impacted by self-regulation, intrinsic value, and test anxiety. Pintrich and DeGroot found all three to be correlated with achievement. In our model, the relationships to achievement were more indirect.

The variables that were not included in the model were cognitive strategy, outcome value, procrastination tendency, and self-efficacy for the exam. As the correlations in Table 1 indicate, both cognitive strategy and procrastination tendency overlapped considerably with self-regulation, which was included in the model. In addition, while all of the other measures were of situational variables, the measure of procrastination tendency was of a dispositional variable, which could account, in part, for its lack of influence. The outcome value variable overlapped considerably with students goals, further suggesting that goals represent a value, and self-efficacy for the exam overlapped with self-efficacy for the course.

The model uncovered in this study provided a blending of the results of the

Zimmerman et al. and Pintrich and DeGroot studies. The similarities reinforce the motivational importance of goals and self-efficacy. The differences suggest that goals are the vehicle through which self-efficacy influences achievement among college students, rather than influencing it directly as it did for high school students. This may reflect the greater importance of grades in college and the greater reliance on tests for determining them.

Moreover, the model reflects the importance of three critical components of motivation: drive - as reflected by goals and intrinsic value, attitudes - as reflected by self-efficacy, and strategy - as reflected by self-regulation.

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Table 1

Matrix of Correlations Between the 12 Variables

	Ach	Anx	CS	GPA	IV	OV	PGs	Pro	SEc	SEe	SGs	SR
Ach	--											
Anx	-.22	--										
CS	.07	-.16	--									
GPA	.32	-.18	.12	--								
IV	.08	.01	.47	.03	--							
OV	.11	.02	.38	.18	.35	--						
PGs	-.08	-.01	.18	.08	.06	.17	--					
Pro	-.07	.22	-.32	-.12	-.30	-.24	-.08	--				
SEc	.24	-.33	.49	.27	.46	.36	.13	-.30	--			
SEe	.27	-.29	.35	.40	.22	.39	.14	-.25	.59	--		
SGs	.33	-.18	.39	.39	.29	.47	.28	-.25	.60	.69	--	
SR	.22	-.26	.80	.19	-.01	.36	.17	-.42	.55	.35	.42	--

ACH: achievement; ANX: test anxiety; CS: cognitive strategy; GPA: grade point average; IV: intrinsic value; OV: outcome value; PGs: parent's goals; PRO: procrastination tendency; SEc: self-efficacy for course; SEe: self-efficacy for exam; SGs: student's goals; SR: self-regulation.

Figure 1. Motivational Model of College Achievement